CLAIMS

What is claimed is:

1. An optical device, comprising:

a tube having an axis, a proximal end, a distal end, and an inner surface;

a light-absorbing treatment on at least a portion of the inner surface of the tube;

an optical instrument mounted inside the tube; and

an optical flat mounted inside the tube between the optical instrument and the distal end of the tube, the optical flat having a light-absorbing element mounted thereto for reducing light emitted from the tube.

2. The optical device of claim 1, wherein the light-absorbing treatment and the light-absorbing element absorb visible, UV, IR light, and other forms of electromagnetic radiation.

3. The optical device of claim 1, wherein the optical flat is mounted at an inclined angle relative to the tube.

4. The optical device of claim 1, wherein the optical flat is elliptical and all light that reaches the optical instrument from the distal end of the tube passes through the optical flat.

5. The optical device of claim 1, wherein the light-absorbing element is oval and opaque.

6. The optical device of claim 1, wherein the light-absorbing element is mounted on a proximal surface of the optical flat and is slightly off-center with respect to the optical flat.

7. The optical device of claim 1, wherein any light that enters the tube from the distal end that is reflected by the optical flat is absorbed by the light-absorbing treatment on the inner surface of the tube.

8. The optical device of claim 1, wherein the optical flat is transparent, has parallel surfaces, and has a smoothness that varies no more than approximately one-fourth of a wavelength of the light passing therethrough.

9. The optical device of claim 1, wherein any light entering the optical instrument from the proximal end of the tube and light that is reflected from surfaces within the optical instrument emanate from virtual focal points within the optical instrument; and wherein

said any light is absorbed by the light-absorbing element.

10. The optical device of claim 1, wherein an axial distance from the distal end of the tube to a nearest portion of the optical flat is greater than a diameter of the tube.

11. The optical device of claim 1, wherein the tube is unobstructed from the optical flat forward to beyond the distal end of the tube.

12. The optical device of claim 1, wherein the optical instrument is mounted adjacent to the proximal end of the tube and magnifies a distant object for observation.

13. An attachment for an optical instrument, comprising:

a tube having an axis, a proximal end, a distal end, and an inner surface;

a light-absorbing treatment on at least a portion of the inner surface of the tube; and

an optical flat mounted inside the tube between the proximal and distal ends, the optical flat having a light-absorbing element mounted thereto for reducing light emitted from the distal end of the tube.

14. The attachment of claim 13, wherein the light-absorbing treatment and the light-absorbing element absorb visible, UV, IR light, and other forms of electromagnetic radiation.

15. The attachment of claim 13, wherein the optical flat is mounted at an inclined angle relative to the tube.

16. The attachment of claim 13, wherein the optical flat is elliptical and all light that reaches the optical instrument from the distal end of the tube passes through the optical flat.

17. The attachment of claim 13, wherein the light-absorbing element is oval and opaque.

18. The attachment of claim 13, wherein the light-absorbing element is mounted on a proximal surface of the optical flat and is slightly off-center with respect to the optical flat.

19. The attachment of claim 13, wherein any light that enters the tube from the distal end that is reflected by the optical flat is absorbed by the light-absorbing treatment on the inner surface of the tube.

20. The attachment of claim 13, wherein the optical flat is transparent, has parallel surfaces, and has a smoothness that varies no more than approximately one-fourth of a wavelength of the light passing therethrough.

21. The attachment of claim 1, wherein any light entering the proximal end of the tube is absorbed by the light-absorbing element.

22. The attachment of claim 1, wherein an axial distance from the distal end of the tube to a nearest portion of the optical flat is greater than a diameter of the tube.

23. The attachment of claim 1, wherein the tube is unobstructed from the optical flat forward to beyond the distal end of the tube.

24. A method of improving a stealth capability of an optical device, comprising:

(a) providing an optical instrument and a tube with an optical flat;

(b) placing a light-absorbing treatment on an inner surface of the tube and a light-absorbing element on the optical flat;

(c) passing light from a scene through a distal end of the tube, the optical flat, and the optical instrument;

(d) absorbing light entering the distal end with the light-absorbing treatment;

(e) absorbing light reflected by the optical instrument with the light-absorbing element such that light emitted from the tube is reduced.

25. The method of claim 24, wherein step (e) further comprises absorbing light entering a proximal end of the tube.

26. The method of claim 24, wherein steps (d) and (e) comprise absorbing visible, UV, IR light, and other forms of electromagnetic radiation.

27. The method of claim 24, further comprising providing the optical flat and the light-absorbing element in oval shapes, and orienting the optical flat at an inclined angle relative to the tube.

28. The method of claim 24, further comprising passing all light that reaches the optical instrument from the distal end of the tube through the optical flat.

29. The method of claim 24, wherein the light-absorbing element is mounted on a proximal surface of the optical flat, and is slightly off-center and opaque with respect to the optical flat.

30. The method of claim 24, wherein step (d) further comprises absorbing any light that enters the tube from the distal end that is reflected by the optical flat with the light-absorbing treatment on the inner surface of the tube.

31. The method of claim 24, wherein the optical flat is transparent, has parallel surfaces, and has a smoothness that varies no more than approximately one-fourth of a wavelength of the light passing therethrough.

32. The method of claim 24, further comprising unobstructing the distal end of the tube from the optical flat forward to beyond the distal end of the tube.